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REPAIRABLE SPARES(U) GENERAL ACCOUNTING OFFICE
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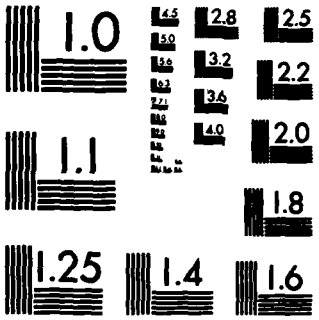

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

SEPTEMBER 20, 1984

B-215938

The Honorable John F. Lehman
The Secretary of the Navy

Dear Mr. Secretary:

Subject: Navy Can Improve Management of Nonaviation Depot-Level Repairable Spares (GAO/NSIAD-84-150)

The Navy manages about 82,000 nonaviation depot-level repairable spares, such as generators, transmitters, and circuit card assemblies. These items, valued at about $5.6 billion, are designated as repairable if future requirements can be met more economically through depot repair than through procurement. Because of the large Navy investment in nonaviation depot-level repairable spares, we undertook this review to determine how well the Navy manages these items. Our review shows that changes in management practices and procedures for these repairable spares would result in substantial savings.

The Navy is repairing many spares that would be more economical to replace through procurement of spares. A major cause of this condition is that the repair or buy decisions are based on adjusted data that favors repairing rather than on actual cost information.

In addition, using activities are not returning many unserviceable spares that should be repaired to avoid unnecessary purchases. We believe that industrially-funded using activities, such as shipyards, lack sufficient incentive to return unserviceable spares because they can pass the added cost of not returning spares onto their customers in the form of higher charges.

In view of these conditions, we recommend that you take the following actions:

--Use up-to-date actual purchase and repair cost information in making repair or buy decisions.

--Periodically review depot-level repairable spares to determine which should continue to be repaired or whether new spares should be purchased as replacements.

(943392)

--Explore alternatives that encourage industrially-funded activities to return more unserviceable spares, test the feasibility of implementing these alternatives, and adopt the one that provides the most incentive to return the unserviceable spares.

In providing official written comments on a draft of this report, the Department of Defense agreed with our recommendations and outlined certain actions it intends to take. However, the Department took issue with our quantification of the extent of the problems, contending that we had overstated their seriousness. We believe our analysis is accurate and our response to the Department's comments is presented in enclosure I, along with more details on our findings and conclusions. The Department's written comments are included as enclosure II.

As you know, 31 U.S.C. ¶720 requires the head of a federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations no later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Chairmen of the above committees; the Chairmen, Senate and House Committees on Armed Services; the Secretary of Defense; and the Director, Office of Management and Budget.

Sincerely yours,

Bill W. Thurman

for Frank C. Conahan
Director

Enclosures - 2

NAVY CAN IMPROVE MANAGEMENT OF NONAVIATION DEPOT-LEVEL REPAIRABLE SPARES

The Navy manages about 82,000 nonaviation depot-level repairable (DLR) spares, valued at about $5.6 billion, through a revolving or working capital fund. These items are classified as repairable if future requirements can be met more economically through depot repair than through procurement. The Navy also manages about 427,000 consumable items--parts which are more economical to discard than to repair. Millions of dollars could be saved if repair or buy decisions were based on actual cost data instead of adjusted data favoring the repair alternative.

OBJECTIVE, SCOPE, AND METHODOLOGY

Our overall objective was to evaluate the Navy's management of nonaviation DLR spares. We concentrated on the practices and procedures for (1) making repair or buy decisions and (2) returning unserviceable spares to the supply system. We performed our work at the Naval Supply Systems Command, Ships Parts Control Center (SPCC), and Philadelphia Naval Shipyard.

At SPCC, the inventory control point for nonaviation DLR spares, we statistically selected and reviewed 100 items from a universe of 3,813 items having recent purchase actions. SPCC had identified the items in this universe as potentially uneconomical to repair because of their relatively high repair costs. We examined records and interviewed SPCC personnel to determine if the proper repair or buy decisions had been made.

At the Philadelphia Naval Shipyard we examined records and interviewed shipyard personnel to determine why the shipyard was not returning unserviceable spares to the supply system. We randomly selected and reviewed 100 requisitions from 977 requisitions onhand in October 1983. These requisitions were for replacements for 2,306 unserviceable spares that the shipyard had promised to return to the supply system for repair.

Our review was made in accordance with generally accepted government auditing standards and was performed between May 1983 and April 1984.

FUNDING DLR SPARES

The Navy finances the purchase and repair of nonaviation DLR spares under a stock fund arrangement. Under this arrangement, items are held in a revolving or working capital fund until issuance. When a customer is issued an item, the customer reimburses the stock fund with appropriated operations and maintenance funds.

The revolving fund operates under the premise that all costs must be recovered by sales of assets to customers. To do this, a surcharge is applied to every item's procurement or repair price to cover losses, obsolescence, transportation, and a price stabilization factor, which the Department of Defense (DOD) levies for cost escalation. In fiscal year 1983 the surcharge rate was about 20 percent on purchases and 55 percent on repairs. The resulting annual prices, which are effective at the beginning of each fiscal year, are designed to maintain the revolving nature of the fund and an appropriate income/outflow stock fund cash balance.

A two price system is used to obtain reimbursement from using activities. Customers are billed either

--the standard price (the procurement price plus a surcharge) if they indicate on the requisition that they will not turn in an unserviceable spare or

--the net price (the repair price plus a surcharge) if they return an unserviceable spare or indicate that they will.

The second method is intended to provide a customer with an incentive to return the unserviceable item. If a customer does not return the spare within a reasonable period, it is billed the difference between these two prices.

SAVINGS AVAILABLE BY NOT REPAIRING UNECONOMICAL ITEMS

Contrary to instructions, the Navy is repairing many spares that would be more economical to replace through the purchase of items. A major cause of this condition is that the repair or buy decisions are based on adjusted data which favors the repair alternative, not on actual cost information as required.

Our analysis of 100 DLR items showed that repair prices exceeded procurement prices for 29 items. Because of the adjusted data used, the Navy continued a repair policy for 28 of the 29 items. Applying this analysis to our universe of 3,813 DLR items, we believe that the Navy could achieve substantial savings by not repairing items that are more economical to replace. At the 95-percent confidence level, these savings could range from $3.4 million to $16.3 million annually.

Navy instructions require inventory managers to maintain records of repair costs and to not repair items once their review indicates that repairs are no longer economical. They are supposed to initiate a review when the repair cost of a DLR spare averages more than 75 percent of the replacement (procurement) cost. For some items, the review may show that continued

repair is not economical but still necessary because long lead time replacements are in short supply. In such cases, repairs may continue until replacements are obtained.

SPCC did not follow these procedures. Instead, to encourage the return of unserviceable spares, it increased standard prices when the repair cost averaged more than 75 percent of the procurement costs. This was done by (1) using the repair price rather than the actual purchase price and (2) increasing the repair price by a multiplier factor (in fiscal year 1983 the factor was 1.8). Thus, standard prices, which inventory managers based their decisions on, substantially exceeded actual procurement costs in many cases.

Because inventory managers based their purchase or repair decisions on these recomputed prices, they overlooked recent procurement costs. Consequently, they were not aware that items could be uneconomical to repair and, therefore, did not review them, as the following two examples illustrate.

--Sixty-five circuit card assemblies were repaired during fiscal year 1983 at a unit cost of $825; an additional 48 are scheduled for repair during fiscal year 1984. Although this item was last bought during fiscal year 1981 at a unit cost of $63, the standard price recorded in the financial records was $1,350. Because the standard price was high, the inventory manager did not suspect that the card assembly could be bought for less than the repair price. After we discussed this matter with him, he called the contractor and learned that 60 cards could be purchased for $79 each. As a result, the inventory manager told us that action would be taken to stop repairing the item.

--Seven transmitters were repaired during fiscal year 1983 at a cost of $1,192 each. Although this item was procured under four different contracts during fiscal year 1981 at an average unit cost of $498, the standard price recorded in the financial records was $2,260. The inventory manager told us that because the fiscal year 1983 repair price seemed reasonable, based on the standard price, he did not question the economics of continuing to repair the item.

SPCC officials agreed that action was necessary to alleviate this condition. According to these officials, a procedure was developed over a year ago to provide inventory managers a monthly listing of items having procurement prices lower than repair costs. However, they added that the procedure was not as effective as it could be because repair price histories were not kept up-to-date.

UNSERVICEABLE RETURNS CAN BE INCREASED

A significant number of spares are not being returned to SPCC for repair. This results in unnecessary purchases by SPCC. We believe that industrially-funded using activities, such as shipyards, are not returning unserviceable spares, in part, because they lack sufficient incentive to do so. Industrially-funded activities can pass the added cost of not returning spares onto their customers in the form of higher charges.

Although unserviceable returns have increased under stock funding, at the end of fiscal year 1983 the value of unserviceable spares that had not been returned to the supply system was about $113 million (according to SPCC records) even though customers had indicated that the items would be returned. More returns could reduce purchases because additional unserviceable items could be scheduled for repair when it is more economical than procurement.

Our review showed that SPCC inventory managers needed many of the items that the Philadelphia Naval Shipyard did not return. On October 11, 1983, the shipyard had 2,306 unserviceable spares (applicable to 977 requisitions for replacement items) that should have been returned to the supply system. The time for returning unserviceable spares averaged 278 days at the shipyard. In reviewing 100 of the 977 requisitions, we found 28 of the requisitions related to unserviceable spares that were needed immediately to fill backorder requirements.

For example, in November 1983 one inventory manager purchased a new circuit card assembly for $493 that could have been repaired for $190 if an unserviceable one had been available. The shipyard was supposed to return four unserviceable circuit card assemblies for repair in May 1983 but did not return them even though it was billed for not doing so. Since repair turnaround time for this item was 6 months and delivery of the backordered items was scheduled between December 1983 and March 1984, some of the requirements could have been satisfied more economically through repair if the unserviceable spares had been returned as promised.

The ability of industrially-funded activities, such as shipyards, to pass the costs of unreturned spares onto their customers appears to be a major reason why more unserviceable spares are not returned to the supply system. Industrially-funded shore activities have a much lower return rate than appropriation-funded fleet activities. We compared billings for unreturned DLR spares during the period from May 28, 1983, to August 28, 1983, and found that shore activities were billed $24.9 million and fleet activities $12.3 million even though fleet activities required most of the replacement spares.

Industrially-funded shore activities recover their costs by increasing charges to their customers. Consequently, the costs from SPCC for unreturned spares eventually are passed on to the customers, thereby nullifying the financial incentive (the difference between the standard price and net price) for returning unserviceable items.

Shipyard officials said that they realize unserviceable spares are not returned as often as they should be and that they have begun to emphasize the importance of returning spares. They also said that an instruction for returning unserviceable spares was being drafted.

CONCLUSIONS AND RECOMMENDATIONS

Standard prices should not be used in making repair or buy decisions because the prices contain surcharges and an add-on factor that masks the true cost of purchase or repair. Standard prices can be used for billing and reimbursement purposes but actual cost information should be used for repair or buy decisions.

Inventory managers should review DLR spares periodically to determine whether they can be bought for less than the cost of repairing them. In making comparisons, inventory managers should use up-to-date actual purchase price and repair cost information.

Increased returns of unserviceable spares from using activities can reduce the investment in purchases because additional unserviceable items can be scheduled for repair. The Navy needs to devise a financial reward and penalty system that encourages industrially-funded activities to return unserviceable items promptly. One way could be to not allow these activities to pass the added costs of unreturned spares onto their customers. Another way could be to require that using activities return unserviceable spares to the supply system before replacement spares are shipped.

We recommend that the Secretary of the Navy, through the Naval Material Command

--use up-to-date actual purchase and repair cost information in making repair or buy decisions;

--periodically review nonaviation DLR spares to determine which should continue to be repaired or whether new spares should be purchased as replacements; and

--explore alternatives that encourage industrially-funded activities to return more unserviceable spares, test the feasibility of implementing these alternatives, and adopt the one that provides the most incentive to return the spares.

AGENCY COMMENTS AND OUR EVALUATION

On August 8, 1984, DOD provided its official written comments on a draft of this report. (See enc. II.) DOD agreed with our recommendations and outlined certain actions it intends to take.

DOD stated that SPCC has been tasked to evaluate the execution of Navy policies in regard to (1) using the latest actual procurement and repair prices (or estimates if actuals are not available) to make repair or buy decisions, (2) periodically reviewing the economics of buying or repairing DLR spares, and (3) making recommendations to the appropriate hardware systems command to transfer spares from DLR management.

Concerning the performance of industrially-funded activities in returning unserviceable spares, DOD stated that, because labor-intensive tracking procedures have not been entirely effective, a change is being made to the shipyard material management system to automate DLR tracking. This change is scheduled to be implemented in June 1985. Also, DOD said that SPCC will conduct repairables management training on the return of spares at industrially-funded activities beginning in the first quarter of fiscal year 1985.

Although DOD generally agreed with our findings and recommendations, it took issue with several statements made in the report. First, DOD believed that our estimated savings may be overstated because (1) the item universe selected was one in which the Navy had recognized in advance that a potential repair-replacement diseconomy existed and (2) the draft report did not discuss whether the repair decision was based solely on the repair versus purchase price review or on operational requirements.

Our report points out that inventory managers did not follow prescribed procedures in determining whether repairs were no longer economical. Instead, they used recomputed prices and overlooked recent procurement prices. As a result, many items were never reviewed because inventory managers believed that the items were economical to repair. Our savings estimate, using valid statistical techniques, is merely a projection of the economies that could result if actual cost information rather than recomputed standard prices were used during the review process. The savings estimate only applies to the universe of 3,813 DLRs from which our sample was drawn.

Our report recognized that certain operational needs, such as shortages of long lead time replacements, may justify continued repair even though it may not be economical to do so. However, inventory managers are not in a position to know if continued repair is justified for operational reasons because

they do not review items for this purpose. The reason for this is that SPCC uses recomputed prices, not actual prices, in making its purchase or repair decisions.

Regarding the 2,306 unserviceable spares that should have been returned to the supply system, DOD indicated that the spares were not available for turn-in because they had not been removed from the ships. DOD added that about 50 percent of all supplemental billings for unreturned spares are subsequently reversed because the unserviceable spares are eventually returned.

Our review of Philadelphia Naval Shipyard records showed that the unserviceable spares were not on ships but rather were at numerous shipyard shops and were available for turn-in. In any event, our basic point is that many unserviceable spares, regardless of the billing action taken, tend to be held for inordinately long periods. This increases the likelihood for unnecessary purchases because often the spares cannot be returned and repaired in time to fill outstanding requirements.

Finally, DOD did not believe that industrially-funded activities lacked incentive to return unserviceable spares. According to DOD, such activities are already penalized financially since they are required to pay the difference between standard and net prices when spares are not returned. Nonetheless, our review showed that large numbers of unserviceable spares, costing millions of dollars, still were not returned for repair when they should have been.

DOD stated that the additional charges, which industrially-funded activities pay when unserviceable spares are not turned-in, increase operating costs, which adversely affects the activities' ability to compete with private industry for ship overhauls. Over the last several years the Navy has been generally following a congressional mandate that 30 percent of ship conversion, alteration, and repair funds be spent in private shipyards and 70 percent be spent in public shipyards. Therefore, as a practical matter, it would appear that there is little relationship between industrially-funded activities competing with private industry for ship overhauls and the need for returning unserviceable DLR spares to reduce unnecessary procurements.

ENCLOSURE II

ENCLOSURE II

THE ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

SR
MANPOWER,
INSTALLATIONS
AND LOGISTICS

8 AUG 1984

Mr. Frank C. Conahan
Director, National Security and
International Affairs Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Conahan:

This is in response to your draft audit report dated May 23, 1984, entitled "Navy Can Improve Management of Nonaviation Depot-Level Repairable Spares" (GAO Code No. 943392, OSD Case No. 6529).

Comments received from the Navy have been used in preparing the enclosed response which addresses the findings and recommendations contained in the draft report.

Sincerely,

Jerry L. Calhoun
Principal Deputy Assistant Secretary of Defense
(Manpower, Installations & Logistics)

Enclosure
As stated

GAO note: Page references have been changed to correspond to pages in the final report.

ENCLOSURE II

Department of Defense
Response to GAO Draft Report - Dated 23 May 1984
(GAO Code #943392-OSD Case #6529)

"Navy Can Improve Management of Non-Aviation
Depot Level Repairable Spares"

FINDINGS

o Finding A: It Would Be More Economical For the Navy To Purchase Rather Than Repair Some Non-Aviation Spare Parts.

GAO reported that the Navy manages about 82,000 non-aviation depot level repairable spares (such as generators, transmitters and circuit card assemblies) which are valued at about $5.6 billion. These items are designated as repairable if future requirements can be met more economically through depot repair than through procurement. Although Navy instructions require inventory managers to maintain records of repair costs and to repair items once it is indicated that repair is uneconomical, GAO found that Ships Parts Control Center (SPCC) did not follow established procedures in determining whether to repair or buy. GAO concluded that a major cause of this condition is that the repair or buy decisions are not based on actual cost information but rather on adjusted data which favors the repair alternative. GAO further concluded that standard prices should not be used in making repair or buy decisions because they contain surcharges and other add-on factors which mask the true purchase or repair cost. GAO finally concluded that the Navy could achieve substantial savings-estimated at between $3.4 million to $16.3 million-- by not repairing items that were more economical to replace. (See pp. 3 to 5.)

DoD Response: Concur. The Navy repairs a few DLRs that would be more economical to procure. The following points, however, are germane to the evaluation of this issue:

(A) The estimated savings ($3.4 to $16.3 million) are based on a sample of only 100 DLRs. Further, the universe from which they were selected (3,813 DLRs) was where Navy recognized in advance that a potential repair-replacement diseconomy existed, but elected to repair. The vast majority of SPCC managed DLRs (in excess of 55,000 DLRs) do not fall into this category. In addition, operational reasons can drive a decision to repair even when uneconomical.

For example, if procurement lead times are lengthy, if the manufacturer has ceased production, or if factory tooling is no longer available, depot repair may be the most effective support decision considering all costs incurred (i.e., the cost of lengthy weapons system downtime) and the urgency of the requirement. The audit report does not discuss whether the

repair decision was based solely on the repair vs purchase cost decision or on operational requirements. Accordingly, the potential for savings may be overstated.

(B) Navy employs actual replacement and repair costs to conduct repair-buy analysis. Navy annual pricing reviews and the recent initiative to Buy Our Spares Smart (BOSS) have placed increased emphasis on obtaining the lowest cost for spares and keeping pricing data up to date. In a limited number of cases, actual replacement costs may be unavailable. For example, when repairables have not been procured in many years, an accurate replacement price is difficult to ascertain. In these cases, estimated costs, based on OSD approved inflation indices, are utilized to best update the available price.

(C) The overall decision concerning an item's assignment as a consumable, field level repairable (FLR), or depot level repairable (DLR) is one made by the Hardware Systems Command (HSC), not the inventory managers. This decision includes life cycle cost analysis and operational impact. Accordingly, it is not appropriate for an ICP to determine if an item should migrate from DLR to FLR or consumable status. Nevertheless, recommendations to the applicable HSC are appropriate when it appears that a change in status would be more economical. This is the policy at Navy's Inventory Control Points.

o Finding B: Some New Purchases Could Be Avoided If Navy Activities Returned Repairable Spare Parts.

GAO found that Navy using activities, particularly industrial funded activities, are not returning some unserviceable spare items that could be repaired, thus avoiding unnecessary new purchases. GAO reported that at the end of FY 1983, shore and fleet activities had not returned unserviceable spares valued at about $113 million to the supply system, even though customers had indicated on requisitions for replacement spares that they would be returned. GAO concluded that the primary reason this occurs is because industrial-funded using activities can pass the added costs on to its customers in the form of higher charges. GAO also concluded that more returns could reduce new purchases because additional unserviceable items could be scheduled for repair where it is determined to be more economical than procurement. (See pp. 6 and 7.)

DoD Response: Partially concur. DoD agrees that the Navy must ensure unserviceable repairables are expeditiously returned for repair. The following points are pertinent to the specific finding in this case:

(A) The GAO evaluators selected a random sample of 100 requisitions at Naval Shipyard Philadelphia for review. The report states (page 3) that these requisitions were for replacements for unserviceable spares that the shipyard "had

ENCLOSURE II

promised to return to the supply system." On page 6, the auditors state that "the shipyard had 2,306 unserviceable spares on hand (applicable to 977 requisitions for replacement items) which should have been returned to the supply system." Naval shipyards requisition repairables from the supply system in advance of overhauls. The requisitions reviewed by GAO were primarily for items that had not yet been used in overhauls. The unserviceable carcasses had not been removed from the ships; therefore, the unserviceable spares were not available for turn-in.

(B) When Depot Level Repairables (DLR) are requisitioned, the supply activity bills the requisitioner at the net price. If the unserviceable spare is not turned in, the activity is supplementally billed the difference between the net and standard cost. Repairable items are often installed by shipyards many months after receipt. Information received from SPCC indicates that approximately 50% of all supplemental billings are subsequently reversed based on turn-in of unserviceable spares. GAO needs to consider this factor before making statements about the value of material not returned to the supply system.

(C) The Department does not, however, concur with the conclusion that NIF activities lack incentive because the cost of not returning the spares can simply be passed on to customers. Industrially funded activities are already penalized for not returning unserviceable spares. The difference between standard rate and net price is charged to overhead when unserviceable spares are not turned in. High overhead costs increase the activities' general operating costs in relation to the standardized labor rate. This adversely impacts the activities' ability to compete with private industry for ship overhauls.

RECOMMENDATIONS

Recommendation 1.

GAO recommended that the Secretary of the Navy, through the Naval Supply Systems Command and the Ships Parts Control Center, use up-to-date actual purchase and repair cost information in making repair or buy decisions. (See ltr., p. 1 and enc. I, p. 7.)

DoD Response: Concur. The Navy will continue to use the latest available actual procurement and repair prices to make repair-buy decisions. Recent spare parts pricing initiatives will ensure accurate, economical procurement costs are entered in price files. In those cases, however, where accurate actual costs are not available (e.g., no recent procurement), estimates will have to be employed. SPCC has been tasked to review policy execution. In addition, the 29 items questioned in the report will be reviewed at the Navy Stock Fund Pricing Review to investigate specific problems needing correction. This will be accomplished within 30 days of the identification of the specific stock numbers to Naval Supply Systems Command by GAO.

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Recommendation 2.

GAO recommended that the Secretary of the Navy, through the Naval Supply Systems Command and the Ships Parts Control Center, make periodic review to determine which non-aviation depot level repairable (DLR) spares should continue to be repaired or whether new spares should be purchased as replacements. (See ltr., p. 1 and enc. I, p. 7.)

DoD Response: Concur. The Department agrees that periodic review of the economics of repair vice procurement of items should be made by the ICPs. SPCC has been tasked to review policy execution in this area. Review of DLRs for potential migration to field level repairable or consumable status is also necessary. It is Navy policy for the ICP to make migration recommendations to the appropriate Hardware Systems Command. SPCC has been tasked to review policy execution in this regard, also. Review of item migration recommendations as well as review of the economics of procurement vice repair will be on-going actions at SPCC.

Recommendation 3. GAO recommended that the Secretary of the Navy, explore alternatives which encourage industrial-funded activities to return more unserviceable spares, test the feasibility of implementing these alternatives, and adopt the one which provides the most incentive to return spares. (See ltr., p. 2 and enc. I, p. 7.)

DoD Response: Concur. SPCC will review industrial activities' performance in returning unserviceable spares. Tracking of repairables at naval shipyards had depended on labor intensive procedures that have not been entirely effective. A change to the shipyard material management system to automate DLR tracking is scheduled for implementation 30 June 1985. This should vastly improve the management of DLR spares at shipyards. The first review using this system will be completed by 31 December 1984 and will be performed periodically thereafter. SPCC will also conduct repairables management training in the return of spares at industrial activities beginning the first quarter of FY 1985. All activities will be reviewed by the end of that fiscal year.

In addition, it is suggested that each recommendation be changed to read "The Secretary of the Navy, through the Naval Material Command" instead of "through the Naval Supply Systems Command and the Ships Parts Control Center" to reflect Navy chain of command.

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